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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,437	08/23/2002	Petter Tuvnes	2002-0441 A	6972

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EXAMINER

ANDREWS, MELVYN J

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,437

Applicant(s)

TUVNES ET AL.

Examiner

Melvyn J. Andrews

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the publication Derwent Acc No. 1981-54812D in view of Schwer (US 4,447,265). The Derwent publication discloses a lime based flux for steel making produced by adding calcium nitrate to calcined lime during cooling which during steel making the nitrate decomposes to form, lime, O₂, and N₂ the gases help mix the slag (see Abstract) but does not explicitly disclose a method of foaming-steel making slags but Schwer discloses a composition for foaming slag in an electric arc steel-making process comprising a carbon source and a source of calcium oxide it would have been obvious to one of ordinary skill in the art at the time the invention was made to expect that the Derwent publication "lime-based flux" would cause the slag to foam because the "lime-based flux" is a source of calcium oxide.

With respect to (currently amended) Claim 12 Derwent publication does not disclose a method which **consists essentially** of adding calcium nitrate but the limitation **consists essentially** does not exclude materials such as CaO being added to the slag because the specification explicitly states "Use of calcium nitrate as an agent for producing a foaming slag in the electric arc will serve the triple objective of adding lime to increase basicity of the slag ..." (specification, page 4, lines 15 to 18). Consequently the burden of showing that the introduction of additional steps or

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components would materially change the characteristics of applicants' invention. In re DeLajarte 143 USPQ 256 MPEP 2111.03

With respect to Schwer it is relied on for the teaching that a slag-foaming composition comprises a source of an oxide of calcium such a source is disclosed by Derwent which states "During steel making the nitrate decomposes to form lime, O₂ and N₂; the gases help to mix the slag".

Claims 18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derwent Acc No. 1981-54812D in view of Schwer (US 4,447,265) as applied to claim 12 above, and further in view of Masucci (US 5,395,420). The Derwent publication and the Schwer patent do not disclose foaming a stainless steel slag but Masucci discloses a process for using foamed slag in the production of stainless steels comprising placing into the slag a charge comprising carbon or coke with limestone it would have been obvious to one of ordinary skill in the art at the time the invention was made that the Derwent publication "lime-based flux" would be useful to cause the stainless steel slag to foam because the "lime-based flux" during steel making comprising nitrate would decompose forming gases to help mix the slag which is equivalent to foaming slag.

With respect to Claims 18 (Currently Amended) and Claim 25 (New) relating to a method of foaming stainless steel slag, Masucci discloses using foamed slag in the production of stainless steel but Masucci is not relied on for disclosing using calcium nitrate to form the foamed slag. Masucci discloses using limestone to form foamed stainless steel slag. It would be obvious have to use the Derwent lime containing

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calcium nitrate to foam stainless steel slag since lime and limestone are both sources of CaO.

With respect to the sequence of adding Fe-Si prior to adding a foaming agent, this feature is disclosed by Masucci Claim 1 steps (a), (b) and (c) (col.4, lines 44 to 68).

Claim 13 to 17 and 19 to 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derwent Acc No. 1981-54812D in view of Schwer (US 4,447,265) as applied to claim 12 above, or further in view of Masucci (US 5,395,420) as applied to claim 18 above, and further in view of Rossborough (US 5,358,550).

With respect to Claims 13 to 17 and 19 the Derwent publication, Schwer and Masucci do not disclose injecting calcium nitrate in slag but Rossborough discloses a method comprising injecting an agent such as calcium nitrate (col.2, line 34) with a carrier gas such as nitrogen (col.9, line 31) it would have been obvious to one of ordinary skill in the art at the time the invention was made to inject the lime-based flux disclosed by Derwent publication because slag is being treated in all cases.

With respect to Claims 20 to 24 the "ratio" of calcium nitrate to carbon is relevant only when calcium nitrate is not added alone to the slag, that is, the claims are not limited to a claimed ratio.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvyn J. Andrews whose telephone number is (571)272-1239. The examiner can normally be reached on 8:00A.M. to 4:30 P.M..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on (571)272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJA
May 14, 2004

Melvyn Andrews
MELVYN ANDREWS
PRIMARY EXAMINER